Before the
Federal Communications Commission
Washington, D.C. 20554

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|---|---|---|
| In the Matter of: | ) | |
| | ) | |
| Unlicensed Operation in the TV Broadcast Bands | ) | ET Docket No. 04-186 |
| | ) | |

# PETITION FOR RECONSIDERATION OF THE NATIONAL ASSOCIATION OF BROADCASTERS

## I. INTRODUCTION AND SUMMARY

The National Association of Broadcasters (NAB)[1] hereby seeks reconsideration of the Office of Engineering and Technology's approval for Nominet UK (Nominet) to operate its white space database system to provide service to the public.[2] NAB's review of Nominet's database has revealed hundreds of errors, including incorrect channel information for at least 200 television stations. Nominet's continued noncompliance with FCC rules also raises concerns about the Commission's overall mechanism to reliably evaluate database administrator efficacy. This process failure is cause for alarm not only for NAB's members, but for any stakeholder interested in the white spaces experiment ever developing into something more substantial than a high school science fair project.

The specific issues with Nominet's database reveal more fundamental problems with the way the Commission evaluates proposed database administrators. Nominet apparently

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[1] The National Association of Broadcasters is a nonprofit trade association that advocates on behalf of free local radio and television stations and broadcast networks before Congress, the Federal Communications Commission and other federal agencies, and the courts.

[2] *Office of Engineering and Technology Announces the Approval of Nominet UK's White Space Database System for Operation*, Public Notice, ET Docket No. 04-186, DA 18-966 (Sept. 19, 2018).

lacks sufficient familiarity with the Commission's systems to ensure that it is pulling the correct information from the FCC's datasets. Perhaps more concerning, however, is that the Commission's processes for evaluating and approving database administrators were insufficient to catch fundamental errors that would cause the database to return faulty information involving hundreds of stations. Absent NAB's expenditure of thousands of dollars to commission an evaluation of Nominet's data, these errors would have gone unnoticed and uncorrected, and would inevitably have resulted in harmful interference to licensed operations.

White spaces proponents, Nominet and the Commission itself have an interest in ensuring that the white spaces database works as intended. Yet, years after NAB first identified significant problems with the database, it remains ineffective and unreliable. Even more remarkably, NAB appears to be the only party, including the Commission, interested or engaged in evaluating its effectiveness and reliability.

NAB is confident that Nominet can and will promptly address the specific issues identified herein – but its database should not be available for public use until it has done so. Further, in light of the scope of the errors, NAB urges the Commission to take two additional steps. First, the Commission should undertake a comprehensive review of Nominet's database and only approve Nominet as a database provider when the Commission itself is satisfied that 100 percent of the data in Nominet's system regarding operating stations is accurate. Second, the Commission should take this opportunity to revise its internal procedures for initial approval of database administrators. The Commission's regime for the prevention of harmful interference to licensed users should not require those users to spend thousands of dollars ensuring the Commission's approach to protecting them is effective.

## II. NOMINET'S DATABASE PRODUCES CRITICAL ERRORS

On June 11, 2018, the Commission conditionally designated Nominet as a white space database administrator, subject to a 45-day public testing period to ensure that the database provides accurate results.[3] Following this testing period, NAB submitted comments identifying issues discovered during the testing period.[4] In response, Nominet suggested that "the most effective means of completing the [white spaces database] test and ensuring the accuracy of datasets imported from FCC databases would be for NAB or any other interested stakeholder to inform us of any other stations that, in its view, are not properly included in the database."[5]

Accordingly, NAB retained the consulting engineering firm of du Treil, Lundin & Rackley, Inc. to test additional sites to determine whether the Nominet database was now providing correct information concerning channel availability. A complete copy of the evaluation is attached. Briefly, the evaluation tested Nominet's channel search tool at 26 locations throughout the United States to confirm that the database produced the correct channel availability. At ***more than three quarters*** of these sites, the Nominet database produced at least one incorrect channel determination. These errors occur because Nominet's database misidentifies channels as available for TVWS use when these channels are in fact in use by television stations. Specifically, Nominet is:

- using incorrect channels for full-power DTV stations in at least 200 cases;

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[3] *Unlicensed Operation in the TV Broadcast Bands*, Order, ET Docket No. 04-186, DA 18-605 (June 11, 2018).

[4] Comments of the National Association of Broadcasters, ET Docket No. 04-186 (Aug. 16, 2018).

[5] Reply of Nominet, ET Docket No. 04-186 (Aug. 23, 2018).

- incorrectly substituting auxiliary station records for primary records in at least 100 cases;
- using incorrect channels for LPTV stations in numerous cases; and
- using incorrect channels for digital replacement translator stations in all cases.

Nominet appears not to understand the nature or structure of the FCC's Media Bureau databases and, as a result, Nominet's database is pulling the wrong information from FCC databases. NAB expects that Nominet can and will promptly remedy this situation and NAB will be happy to work with Nominet and the Commission to ensure that Nominet understands the data it should be using. But the unavoidable conclusion following the evaluation of Nominet's database remains that Nominet should never have been provisionally, let alone finally, approved as a database administrator given the state of its database. Accordingly, its approval must be revoked until these issues are addressed.

## III. THE COMMISSION SHOULD REWORK ITS INTERNAL PROCESSES AND POLICIES FOR CONDITIONAL APPROVAL OF DATABASE ADMINISTRATORS

NAB has no doubt that Nominet has the best intentions with respect to ensuring the availability of a functional white spaces database. But given the scope of the errors in Nominet's database, it is clear that at some point the existing approval processes failed when it came to approving Nominet as a database administrator. For example, Nominet is using incorrect channel information for 200 full power television stations – even a cursory, partial check of its database should have revealed the substantial problems that Nominet would need to remedy prior to conditional approval or public testing.

This process failure is a cause for concern for any stakeholder in the white spaces ecosystem. The database is the *only* means of preventing harmful interference to licensed services; the interference protection regime the Commission chose to adopt for white spaces operations pivots entirely around the database providing accurate, reliable information to

ensure that white space devices operate only on unoccupied channels. Incorrect channel information undermines the legitimacy of the whole enterprise.

The Commission's Office of Engineering and Technology (OET) describes a detailed set of procedures for evaluation of a proposed white spaces database administrator.[6] According to these procedures, OET will "test database systems for their ability to produce correct lists of available channels."[7] NAB is not certain what level of such testing OET undertakes in the ordinary course before conditionally approving a database administrator, but we would respectfully submit that in this case the level of testing was nowhere near sufficient. The number of errors, and the nature of those errors, demonstrates the need for substantially more testing as a general matter as well as in the specific case of Nominet.

The published guidelines also specify that OET will verify that the database properly contacts authorized devices by examining an actual device that is designed to contact the database for available channels, and that a "database system will not be granted operational authority until we test the system with an actual device."[8] NAB is not aware of any authorized devices compatible with the Nominet database, nor have we seen any indication that OET performed testing on an actual device as it stated would occur prior to authorizing a database system. We are at a loss to understand how OET could grant operational authority to Nominet without verifying that its registration database function works.

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[6] OET Plan for Evaluation of TVWS Database Systems for Operation, Version 3 (Feb. 13, 2012) available at: https://transition.fcc.gov/oet/whitespace/guides/TVWS_Database_System_Approval_Process3.pdf

[7] *Id.* at 1.

[8] *Id.* at 1-2.

What is plain is that the approval process completely failed in this instance. Had NAB not commissioned a review of Nominet's database – at considerable expense – the errors would likely never have been discovered. The Commission cannot responsibly rely on private industry actors to do the Commission's job and ensure that the *sole* mechanism for preventing harmful interference works as intended.

## IV. CONCLUSION

Nominet's white spaces database provides incorrect channel availability information at more than three out of four tested sites. This is because Nominet is pulling the wrong information from FCC files and, as a result, has incorrect channel information for hundreds of television stations. Nominet must be decertified as a database administrator until it can convince the Commission it has corrected every one of these errors. NAB will be happy to work with the Commission and Nominet to ensure that this happens.

More fundamentally, we urge the Commission to reevaluate its processes for approving database administrators in the first place. It should not be necessary for private industry to spend thousands of dollars serving as a regulatory backstop for the Commission.

Respectfully submitted,

**NATIONAL ASSOCIATION OF BROADCASTERS**
1771 N Street, NW
Washington, DC 20036
(202) 429-5430

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Rick Kaplan
Patrick McFadden
Robert Weller

October 19, 2018

# NOMINET TVWS DATABASE EVALUATION

## SUMMARY OF FINDINGS

The undersigned was retained by the National Association of Broadcasters to evaluate the Nominet Television White Space (TVWS) database and online 'Channel Search' tool for accuracy. The evaluation involved an examination of the 'fcc_tv_station.csv' downloadable database available online and the use of the TVWS Channel Search tool also available online.

In the case of the Nominet 'fcc_tv_station.csv' database, a detailed evaluation was conducted of all of the U.S. full-service digital television ('DTV') records. These records were compared against known correct data from a recent download of the FCC's engineering database.

In the case of the Nominet 'Channel Search' tool, studies were conducted at 26 communities throughout the U.S. to verify the 'Available Channel' results returned. The communities employed in the studies were selected from the largest down to the smallest of U.S. television markets.

Of the 26 community locations studied, 20 were found to have at least one erroneously available channel returned. In this respect, the failure rate is 77% of studies conducted.

It was determined that most of the channel availability failures fell into several categories of cases where the TVWS data were incorrect for particular reasons. Attached hereto are 'Case Studies' that provide examples of the various points of failure found in the Nominet TVWS database. These are summarized as follows:

- 'DTX' Records Case – The Nominet TVWS database erroneously substituted television auxiliary records for full-service records in certain instances.
- Incorrect DTV Channel Case – The Nominet TVWS database erroneously employed the incorrect licensed channel for a number of DTV stations.
- Incorrect LPTV Channel Case - The Nominet TVWS database erroneously employed the incorrect licensed channel for certain LPTV stations.
- 'DRT' Records Case – The Nominet TVWS database erroneously employed the incorrect channel for Digital Replacement Channel ('DRT') stations.

In addition, a Nominet Channel Search studies revealed a failure to protect a FCC registered receive location. This is outlined in the Protected Receive Site Case Study attached hereto.

This statement is true and correct to the best of my knowledge and belief.

Louis R. du Treil, Jr., P.E.

du Treil, Lundin & Rackley, Inc.
3135 Southgate Circle
Sarasota, Florida 34239

October 9, 2018

# NOMINET TVWS DATABASE EVALUATION

## 'DTX' RECORDS CASE STUDY
## TOPEKA, KANSAS EXAMPLE

In this case study, it was found that the Nominet TVWS database substituted a licensed full-service DTV auxiliary record for the full-service DTV primary station record.

The example station is WDAF-TV, which is licensed for operation on Channel 34 at Kansas City, Missouri. The record in the Nominet TVWS database for the WDAF-TV is that of the WDAF-TV auxiliary facility with FCC license File No. BXLCDT-20121102ABY. This is a 'DTX' record for the WDAF-TV facility. The record for the WDAF-TV protected facility should be that under FCC File No. BLCDT-20091008AAW. This is the 'DTV' record for the WDAF-TV facility.

The attached tabulation is an FCC Engineering Database extraction for the WDAF-TV licensed primary ('DTV') and auxiliary ('DTX') facilities. This shows that the WDAF-TV primary facility is licensed with an effective radiated power of 1000 kW, while the WDAF-TV auxiliary facility is licensed with an effective radiated power of 1 kW.

The Nominet 'fcc_tv_station.csv' database of October 3, 2018, lists only one protected record for WDAF-TV and it is that of its auxiliary ('DTX') facility.

A test study was conducted using the Nominet Channel Search tool for a location in Topeka, Kansas at coordinates: 39.05 N.L. / 95.70 W.L. The attached Nominet Channel Search tool results indicate that Channel 34 is available for a fixed TVWS facility with a power limit of 40 dBm.

A map showing the Topeka, Kansas study point overlaid on the WDAF-TV protected 41 dBu service contour indicates that Channel 34 should be precluded at Topeka, Kansas.

At least 100 such 'DTX' record cases were found in the Nominet 'fcc_tv_station.csv' database of October 3, 2018.

# TV Inquiry

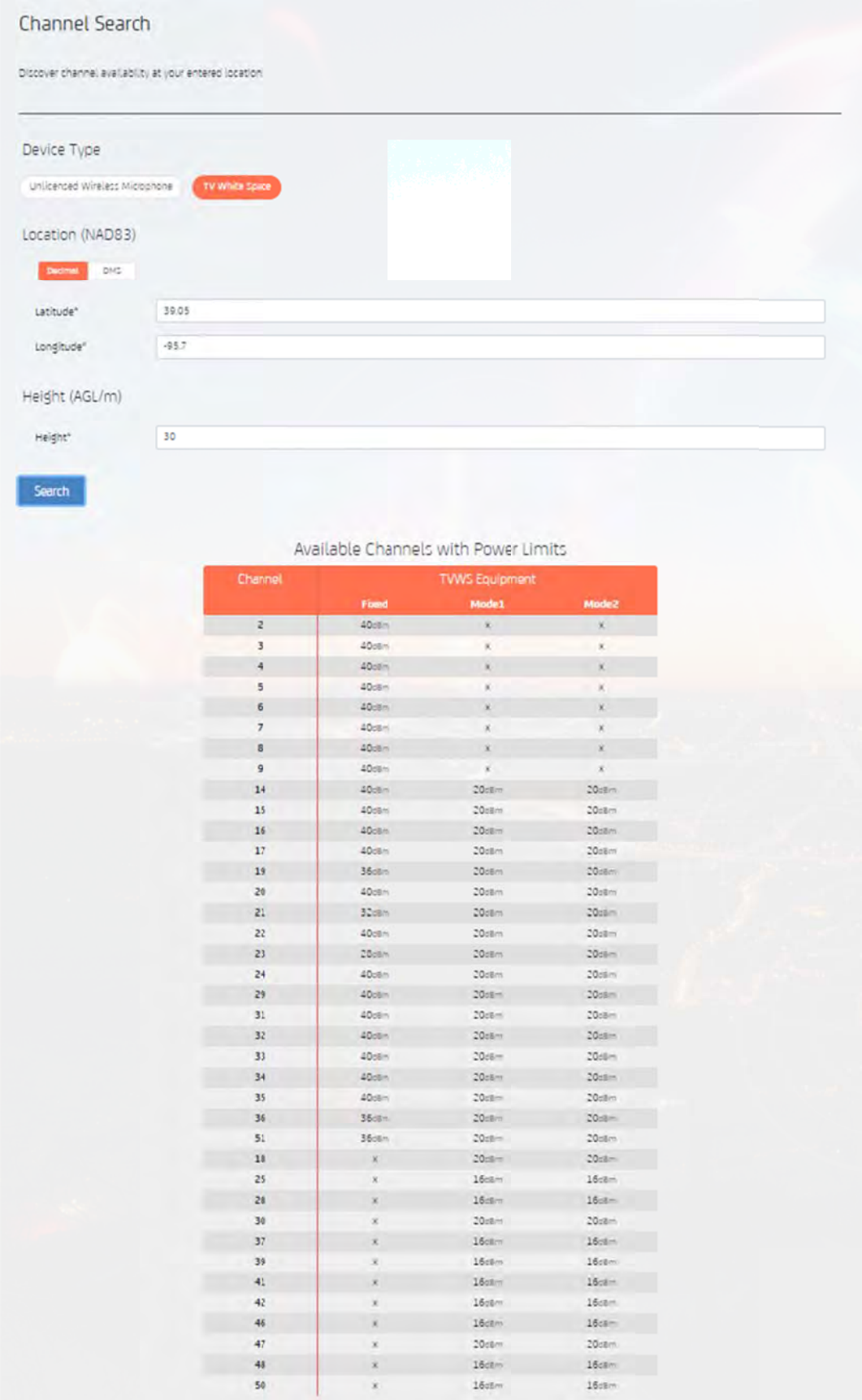
## WDAF-TV LICENSED RECORDS

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida

| Callsign | Chan. | Type | Zone | Service | Status | City | | State | Latitude | Longitude | App. ID | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARN | | | DA | Ant. ID | Rotation | ERP (kW) | HAAT (m) | RCAMSL (m) | | Rec. Type | Facility ID | |
| **WDAF-TV** | 34 | L | 2 | DT | LIC | KANSAS CITY | | MO | 039-04-21 | 094-35-45 | 1335493 | |
| BLCDT-20091008AAW | | | N | 87300 | | 1000 | 347 | 616 | | C | 11291 | /1/ |
| **WDAF-TV** | 34 | XL | 2 | DX | LIC | KANSAS CITY | | MO | 039-04-21 | 094-35-45 | 1522639 | |
| BXLCDT-20121102ABY | | | N | 96193 | | 1 | 226.8 | 468.2 | | C | 11291 | /2/ |

Notes:
/1/ - WDAF-TV primary facility license record, which should be in TVWS database but which is not listed.
/2/ - WDAF-TV auxiliary facility license record, which appears to have been erroneously listed in Nominet TVWS database.

# TOPEKA, KANSAS



Channel Search

Discover channel availability at your entered location

Device Type

Unlicenced Wireless Microphone | TV White Space

Location (NAD83)

Decimal | DMS

Latitude* 39.05

Longitude* -95.7

Height (AGL/m)

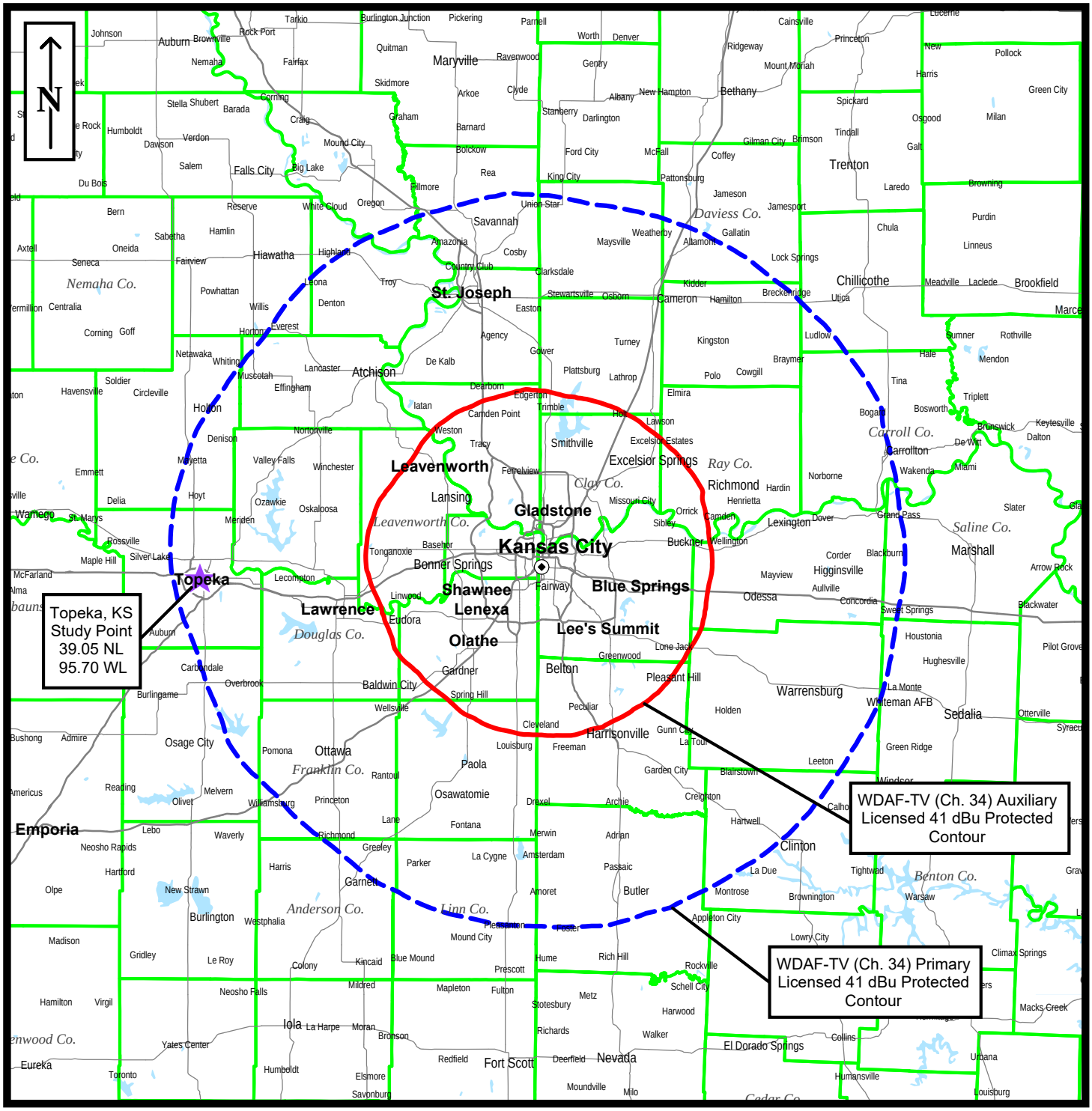
Height* 30

Search

Available Channels with Power Limits

| Channel | TVWS Equipment | | |
|---|---|---|---|
| | Fixed | Mode1 | Mode2 |
| 2 | 40dBm | x | x |
| 3 | 40dBm | x | x |
| 4 | 40dBm | x | x |
| 5 | 40dBm | x | x |
| 6 | 40dBm | x | x |
| 7 | 40dBm | x | x |
| 8 | 40dBm | x | x |
| 9 | 40dBm | x | x |
| 14 | 40dBm | 20dBm | 20dBm |
| 15 | 40dBm | 20dBm | 20dBm |
| 16 | 40dBm | 20dBm | 20dBm |
| 17 | 40dBm | 20dBm | 20dBm |
| 19 | 36dBm | 20dBm | 20dBm |
| 20 | 40dBm | 20dBm | 20dBm |
| 21 | 32dBm | 20dBm | 20dBm |
| 22 | 40dBm | 20dBm | 20dBm |
| 23 | 20dBm | 20dBm | 20dBm |
| 24 | 40dBm | 20dBm | 20dBm |
| 29 | 40dBm | 20dBm | 20dBm |
| 31 | 40dBm | 20dBm | 20dBm |
| 32 | 40dBm | 20dBm | 20dBm |
| 33 | 40dBm | 20dBm | 20dBm |
| 34 | 40dBm | 20dBm | 20dBm |
| 35 | 40dBm | 20dBm | 20dBm |
| 36 | 36dBm | 20dBm | 20dBm |
| 51 | 36dBm | 20dBm | 20dBm |
| 18 | x | 20dBm | 20dBm |
| 25 | x | 16dBm | 16dBm |
| 26 | x | 16dBm | 16dBm |
| 30 | x | 20dBm | 20dBm |
| 37 | x | 16dBm | 16dBm |
| 39 | x | 16dBm | 16dBm |
| 41 | x | 16dBm | 16dBm |
| 42 | x | 16dBm | 16dBm |
| 46 | x | 16dBm | 16dBm |
| 47 | x | 20dBm | 20dBm |
| 48 | x | 16dBm | 16dBm |
| 50 | x | 16dBm | 16dBm |

Note: Channel 34 is returned as an available channel despite WDAF-TV (Ch. 34) licensed facility.




# LOCATION OF TOPEKA, KANSAS STUDY POINT AND WDAF-TV (CH. 34) PROTECTED CONTOURS FOR BOTH PRIMARY ('DTV') AND AUXILIARY ('DTX') FACILITIES

duTreil, Lundin & Rackley, Inc. Sarasota, Florida

# NOMINET TVWS DATABASE EVALUATION

## INCORRECT DTV CHANNEL CASE STUDY
## AUGUSTA, GEORGIA EXAMPLE

In this case study, it was found that the Nominet TVWS database substituted a DTV construction permit channel for the licensed DTV station channel.

The example station is WFXG, which is licensed for operation on Channel 31 at Augusta, Georgia. The record in the Nominet TVWS database for the WFXG facility is that of the WFXG licensed facility with FCC File No. 0000013467, but listed with the channel of the WFXG construction permit (C.P.) facility (FCC File No. 0000034163). The C.P. record for the WFXG facility is the future Incentive Auction transition facility, which will be implemented beginning on August 3, 2019. The channel for the WFXG protected facility should be that under FCC File No. 0000013467 (Ch. 31).

The attached tabulation is an FCC Engineering Database extraction for the WFXG licensed and C.P. facilities. This shows that the WFXG facility is licensed on Channel 31, while the WFXG C.P. facility is to be built on Channel 36. The WFXG C.P. is not to be implemented until August 3, 2019 at the earliest.

The Nominet 'fcc_tv_station.csv' database of October 3, 2018, lists only one protected record for WFXG, which reflects its licensed facility, but with the WFXG C.P. channel (36) shown instead of the correct channel (31).

A test study was conducted using the Nominet Channel Search tool for a location in Augusta, Georgia at coordinates: 33.45 N.L. / 81.95 W.L. The attached Nominet Channel Search tool results indicate that Channel 31 is available for a fixed TVWS facility with a power limit of 40 dBm.

A map showing the Augusta, Georgia study point overlaid on the WFXG protected 41 dBu service contour indicates that Channel 31 should be precluded at Augusta, Georgia.

At least 200 such DTV channel substitution cases appear to exist in the Nominet 'fcc_tv_station.csv' database of October 3, 2018.

# TV Inquiry

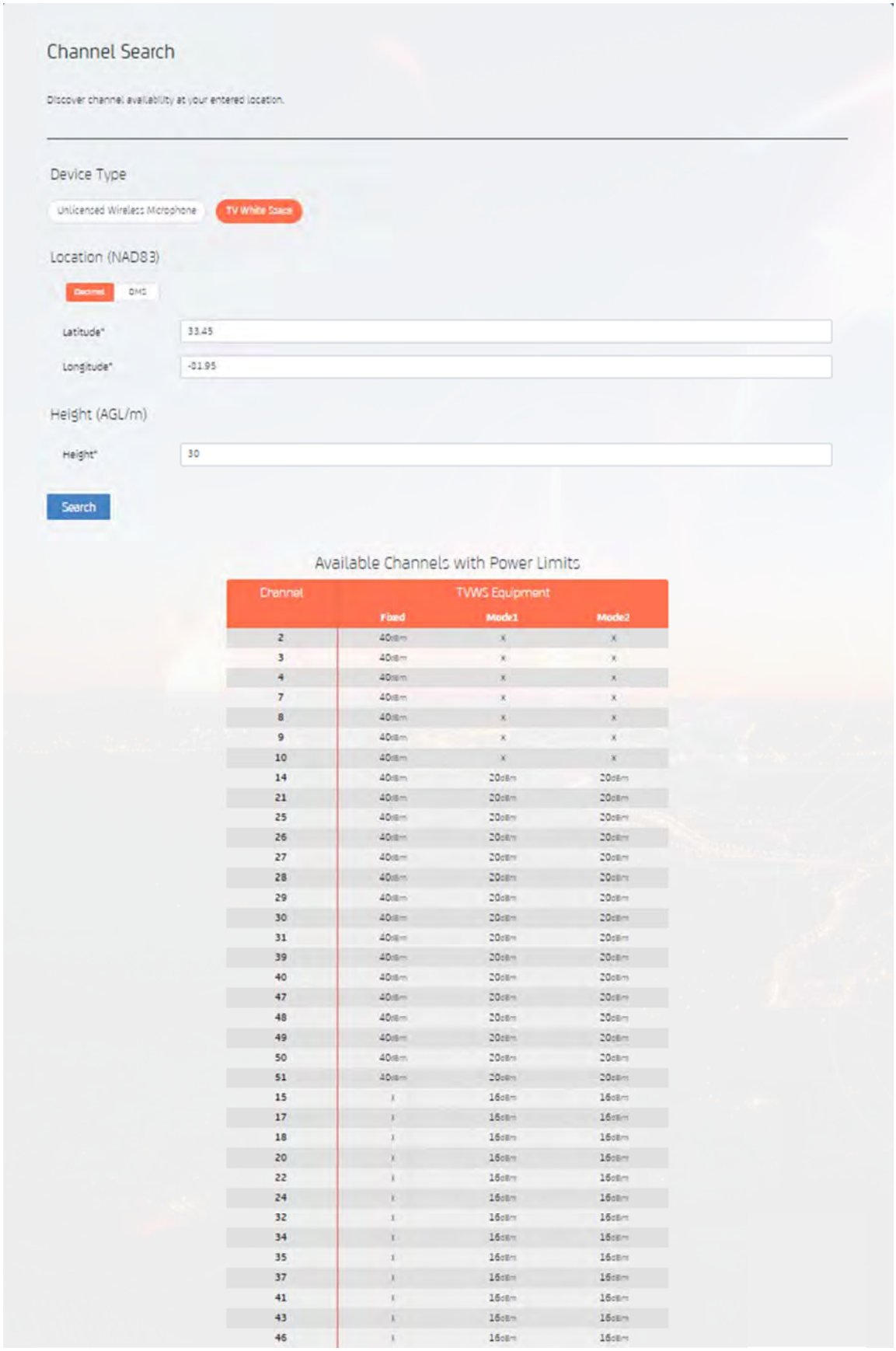
## WFXG LICENSE AND C.P. RECORDS

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida

| Callsign | Chan. | Type | Zone | Service | Status | City | | State | Latitude | Longitude | App. ID | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARN | | | DA | Ant. ID | Rotation | ERP (kW) | HAAT (m) | RCAMSL (m) | | Rec. Type | Facility ID | |
| **WFXG** | 31 | L | 2 | DT | LIC | AUGUSTA | | GA | 033-25-00.4 | 081-50-05.5 | 2003580 | /1/ |
| BLANK-0000013467 | | | N | 91962 | | 413 | 384 | 466 | | C | 3228 | |
| **WFXG** | 36 | MP | 2 | DT | CP MOD | AUGUSTA | | GA | 033-25-01 | 081-50-05 | 2008842 | |
| BLANK-0000034163 | | | N | 1002207 | | 373 | 380 | 463.3 | | C | 3228 | /2/ |

Notes:
/1/ - WFXG facility license record, which should be in TVWS database showing Channel 31. But the channel in the TVWS database is listed as the C.P. channel of 36.
/2/ - WFXG facility construction permit (C.P.) record for Channel 36. WFXG is in FCC Incentive Auction transition Phase 5, which will not start testing until August 3, 2019.

# AUGUSTA, GEORGIA



Channel Search

Discover channel availability at your entered location.

Device Type

Unlicensed Wireless Microphone | TV White Space

Location (NAD83)

Decimal | DMS

Latitude* 33.45

Longitude* -81.95

Height (AGL/m)

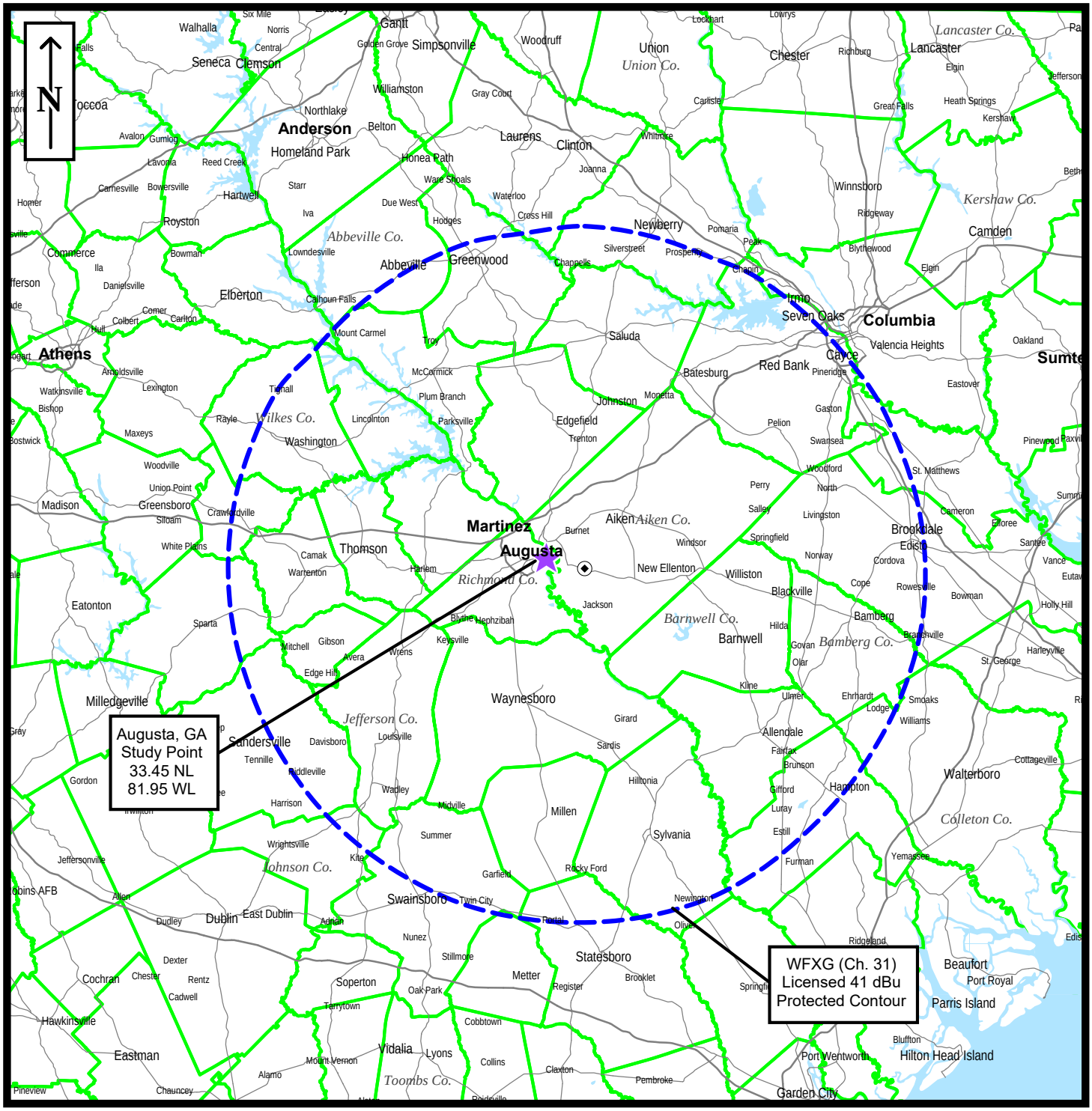
Height* 30

Search

Available Channels with Power Limits

| Channel | TVWS Equipment | | |
|---|---|---|---|
| | Fixed | Mode1 | Mode2 |
| 2 | 40dBm | x | x |
| 3 | 40dBm | x | x |
| 4 | 40dBm | x | x |
| 7 | 40dBm | x | x |
| 8 | 40dBm | x | x |
| 9 | 40dBm | x | x |
| 10 | 40dBm | x | x |
| 14 | 40dBm | 20dBm | 20dBm |
| 21 | 40dBm | 20dBm | 20dBm |
| 25 | 40dBm | 20dBm | 20dBm |
| 26 | 40dBm | 20dBm | 20dBm |
| 27 | 40dBm | 20dBm | 20dBm |
| 28 | 40dBm | 20dBm | 20dBm |
| 29 | 40dBm | 20dBm | 20dBm |
| 30 | 40dBm | 20dBm | 20dBm |
| 31 | 40dBm | 20dBm | 20dBm |
| 39 | 40dBm | 20dBm | 20dBm |
| 40 | 40dBm | 20dBm | 20dBm |
| 47 | 40dBm | 20dBm | 20dBm |
| 48 | 40dBm | 20dBm | 20dBm |
| 49 | 40dBm | 20dBm | 20dBm |
| 50 | 40dBm | 20dBm | 20dBm |
| 51 | 40dBm | 20dBm | 20dBm |
| 15 | x | 16dBm | 16dBm |
| 17 | x | 16dBm | 16dBm |
| 18 | x | 16dBm | 16dBm |
| 20 | x | 16dBm | 16dBm |
| 22 | x | 16dBm | 16dBm |
| 24 | x | 16dBm | 16dBm |
| 32 | x | 16dBm | 16dBm |
| 34 | x | 16dBm | 16dBm |
| 35 | x | 16dBm | 16dBm |
| 37 | x | 16dBm | 16dBm |
| 41 | x | 16dBm | 16dBm |
| 43 | x | 16dBm | 16dBm |
| 46 | x | 16dBm | 16dBm |

Note: Channel 31 is returned as an available channel for the Augusta, GA location despite the fact that it is located within the co-channel protected contour of WFXG, Augusta, GA (Ch. 31).




# LOCATION OF AUGUSTA, GEORGIA STUDY POINT AND WFXG (CH. 31) PROTECTED CONTOUR

duTreil, Lundin & Rackley, Inc. Sarasota, Florida

# NOMINET TVWS DATABASE EVALUATION

## INCORRECT LPTV CHANNEL CASE STUDY
## LIMA, OHIO EXAMPLE

In this case study, it was found that the Nominet TVWS database substituted a LPTV construction permit channel for the licensed station channel.

The example station is W32DS-D, which is licensed for operation on Channel 32 at Maplewood, Ohio. The record in the Nominet TVWS database for the W32DS-D facility is that of the W32DS-D licensed facility with FCC File No. BLDTT-20110104ABK, but listed with the channel of the W32DS-D construction permit (C.P.) facility, which is Channel 25. The C.P. record for the W32DS-D facility is the future displacement facility (FCC File No. 0000054368), which is not yet licensed. The channel for the W32DS-D protected facility should be Channel 32.

The attached tabulation is an FCC Engineering Database extraction for the W32DS-D licensed and C.P. facilities. This shows that the W32DS-D facility is licensed on Channel 32, while the W32DS-D C.P. facility is to be built on Channel 25 at some future date.

The Nominet 'fcc_tv_station.csv' database of October 3, 2018, lists only one protected record for W32DS-D, which reflects its licensed facility, but with the W32DS-D C.P. channel (25) shown instead of the correct channel (32).

A test study was conducted using the Nominet Channel Search tool for a location in Lima, Ohio at coordinates: 40.75 N.L. / 84.10 W.L. The attached Nominet Channel Search tool results indicate that Channel 32 is available for a fixed TVWS facility with a power limit of 40 dBm.

A map showing the Lima, Ohio study point overlaid on the W32DS-D protected 51 dBu service contour indicates that Channel 32 should be precluded at Lima, Ohio.

There appear to be numerous such LPTV channel substitution cases existing in the Nominet 'fcc_tv_station.csv' database of October 3, 2018.

# TV Inquiry

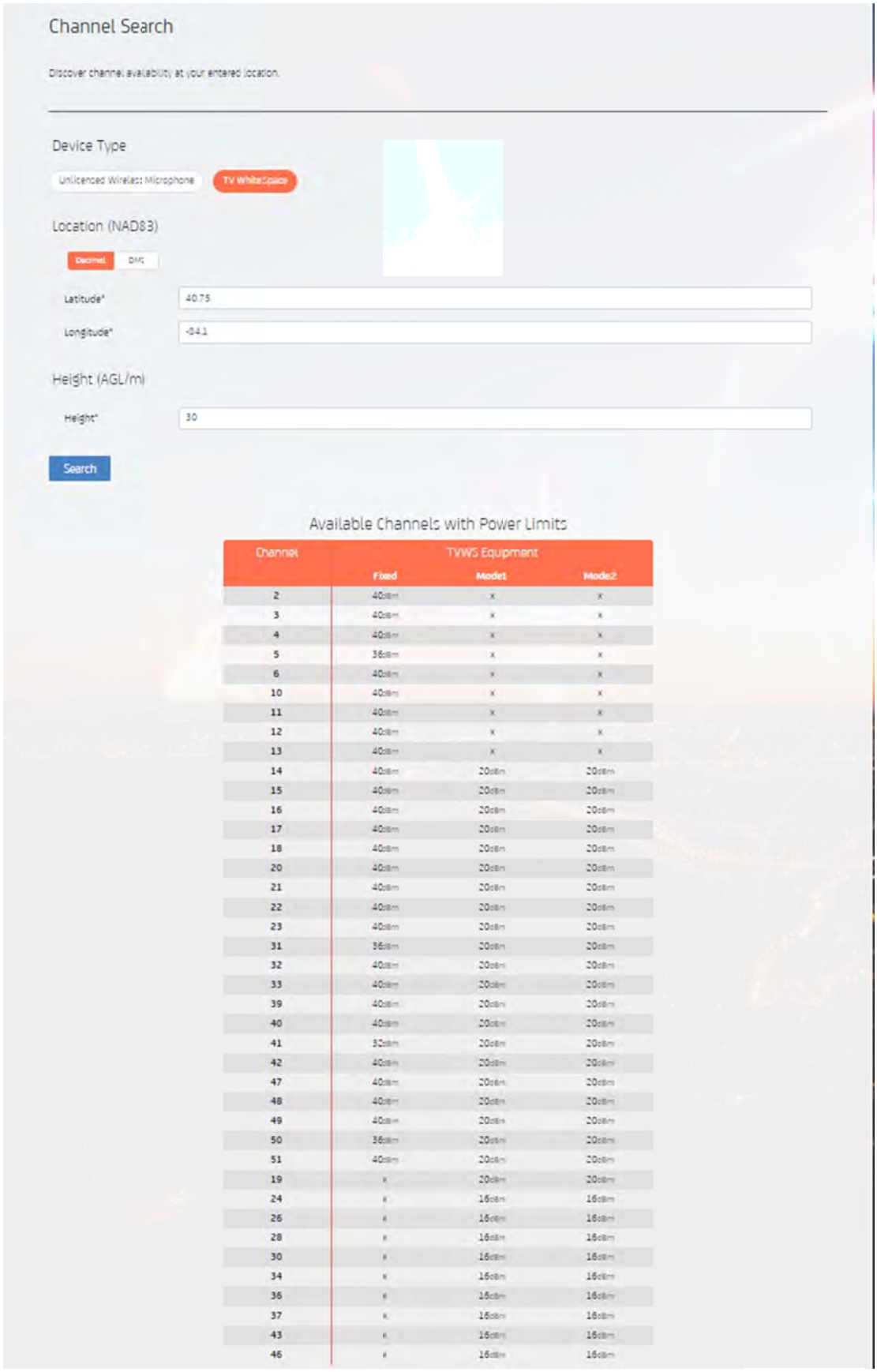
## W32DS-D LICENSE AND C.P. RECORDS

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida

| Callsign | Chan. | Type | Zone | Service | Status | City | | State | Latitude | Longitude | App. ID | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARN | | | DA | Ant. ID | Rotation | ERP (kW) | HAAT (m) | RCAMSL (m) | | Rec. Type | Facility ID | |
| **W32DS-D** | 32 | L | | LD | LIC | MAPLEWOOD | | OH | 040-33-10.3 | 084-31-02.3 | 1412707 | /1/ |
| BLDTT-20110104ABK | | | C | 97609 | 0 | 6.8 | | 412.5 | | C | 25069 | |
| **W32DS-D** | 25 | DIS | | LD | CP | MAPLEWOOD | | OH | 040-33-10.5 | 084-31-02.1 | 2016357 | /2/ |
| BLANK-0000054368 | | | D | 1003680 | 0 | 6.8 | | 412.5 | | C | 25069 | |

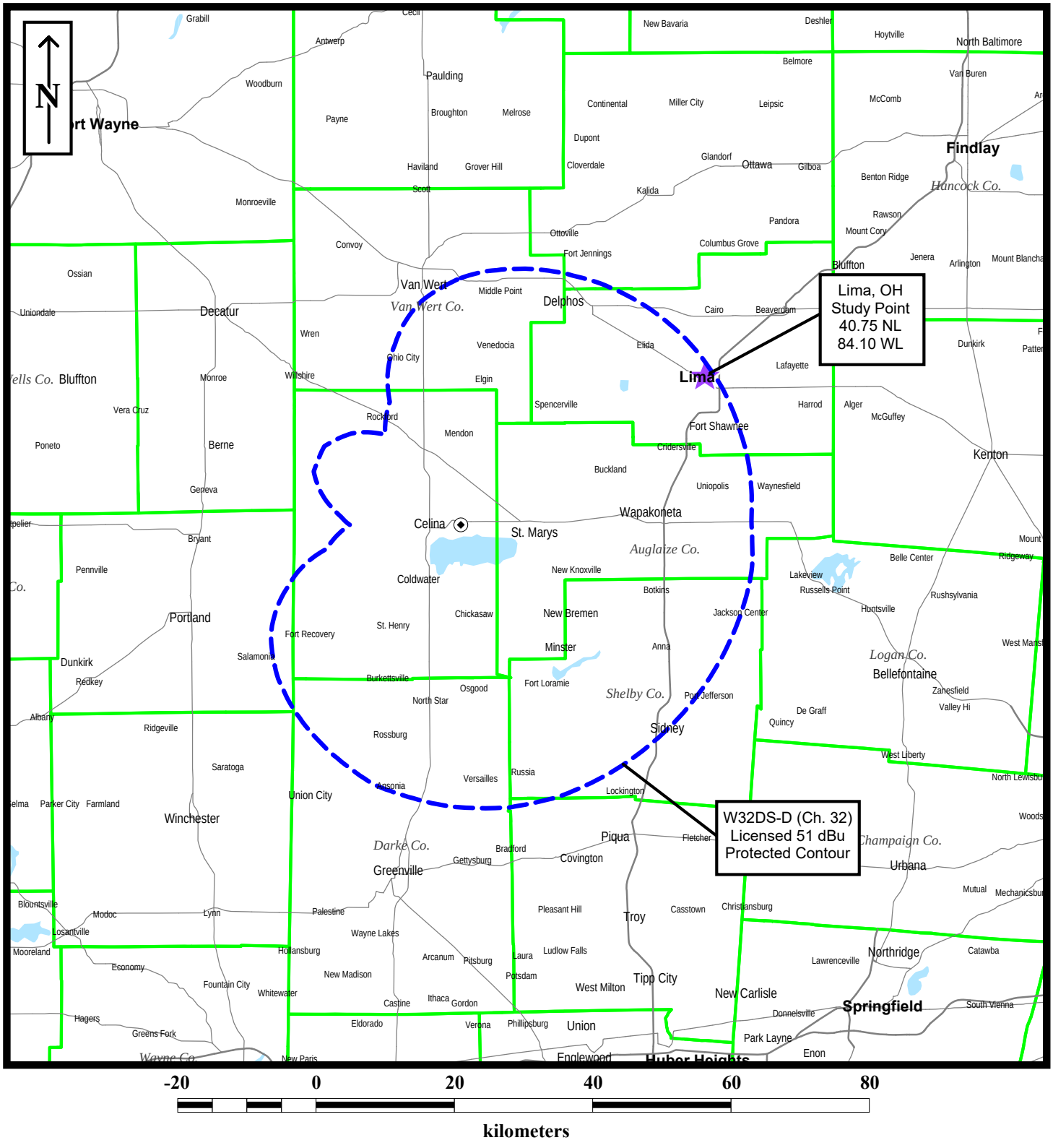
Notes:
/1/ - W32DS-D facility license record, which should be in TVWS database as indicated with Channel 32. But appears to have been substituted with the C.P. channel of 25.
/2/ - W32DS-D facility construction permit (C.P.) record for Channel 25.

# LIMA, OHIO




| Channel | TVWS Equipment | | |
|---|---|---|---|
| | Fixed | Mode1 | Mode2 |
| 2 | 40dBm | x | x |
| 3 | 40dBm | x | x |
| 4 | 40dBm | x | x |
| 5 | 36dBm | x | x |
| 6 | 40dBm | x | x |
| 10 | 40dBm | x | x |
| 11 | 40dBm | x | x |
| 12 | 40dBm | x | x |
| 13 | 40dBm | x | x |
| 14 | 40dBm | 20dBm | 20dBm |
| 15 | 40dBm | 20dBm | 20dBm |
| 16 | 40dBm | 20dBm | 20dBm |
| 17 | 40dBm | 20dBm | 20dBm |
| 18 | 40dBm | 20dBm | 20dBm |
| 20 | 40dBm | 20dBm | 20dBm |
| 21 | 40dBm | 20dBm | 20dBm |
| 22 | 40dBm | 20dBm | 20dBm |
| 23 | 40dBm | 20dBm | 20dBm |
| 31 | 36dBm | 20dBm | 20dBm |
| 32 | 40dBm | 20dBm | 20dBm |
| 33 | 40dBm | 20dBm | 20dBm |
| 39 | 40dBm | 20dBm | 20dBm |
| 40 | 40dBm | 20dBm | 20dBm |
| 41 | 32dBm | 20dBm | 20dBm |
| 42 | 40dBm | 20dBm | 20dBm |
| 47 | 40dBm | 20dBm | 20dBm |
| 48 | 40dBm | 20dBm | 20dBm |
| 49 | 40dBm | 20dBm | 20dBm |
| 50 | 36dBm | 20dBm | 20dBm |
| 51 | 40dBm | 20dBm | 20dBm |
| 19 | x | 20dBm | 20dBm |
| 24 | x | 16dBm | 16dBm |
| 26 | x | 16dBm | 16dBm |
| 28 | x | 16dBm | 16dBm |
| 30 | x | 16dBm | 16dBm |
| 34 | x | 16dBm | 16dBm |
| 36 | x | 16dBm | 16dBm |
| 37 | x | 16dBm | 16dBm |
| 43 | x | 16dBm | 16dBm |
| 46 | x | 16dBm | 16dBm |

Note: Channel 32 is returned as an available channel for the Lima, Ohio location despite the fact that it is located within the co-channel protected contour of W32DS-D, Maplewood, OH (Ch. 32).




# LOCATION OF LIMA, OHIO STUDY POINT AND W32DS-D (CH. 32) PROTECTED CONTOUR

duTreil, Lundin & Rackley, Inc. Sarasota, Florida

# NOMINET TVWS DATABASE EVALUATION

## 'DRT' RECORDS CASE STUDY
## BANGOR, MAINE EXAMPLE

In this case study, it was found that the Nominet TVWS database substituted the licensed full-service DTV channel for the Digital Replacement Channel ('DRT') station record.

The example station is WMEB-TV, which is licensed for operation on Channel 9 at Orono, Maine (FCC File No. BLEDT-20020508AAS). WMEB-TV also holds a license for a DRT facility, which operates on Channel 25 at East Eddington, Maine (FCC File No. BLEDT-20110729ADO).

The attached tabulation is an FCC Engineering Database extraction for the WMEB-TV licensed primary DTV and DRT facilities. This shows that the WMEB-TV primary facility is licensed on Channel 9, while the WMEB-TV DRT facility is licensed on Channel 25.

The Nominet 'fcc_tv_station.csv' database of October 3, 2018, lists both facility records for WMEB-TV; but both records have the same channel (9), which is that of the primary DTV station.

A test study was conducted using the Nominet Channel Search tool for a location in Bangor, Maine at coordinates: 44.80 N.L. / 68.75 W.L. The attached Nominet Channel Search tool results indicate that Channel 25 is available for a fixed TVWS facility with a power limit of 40 dBm.

A map showing the Bangor, Maine study point overlaid on the WMEB-TV DRT protected 51 dBu service contour indicates that Channel 25 should be precluded at Bangor, Maine.

It appears that all DRT records in the Nominet 'fcc_tv_station.csv' database of October 3, 2018 have this channel substitution error.

# *TV Inquiry*

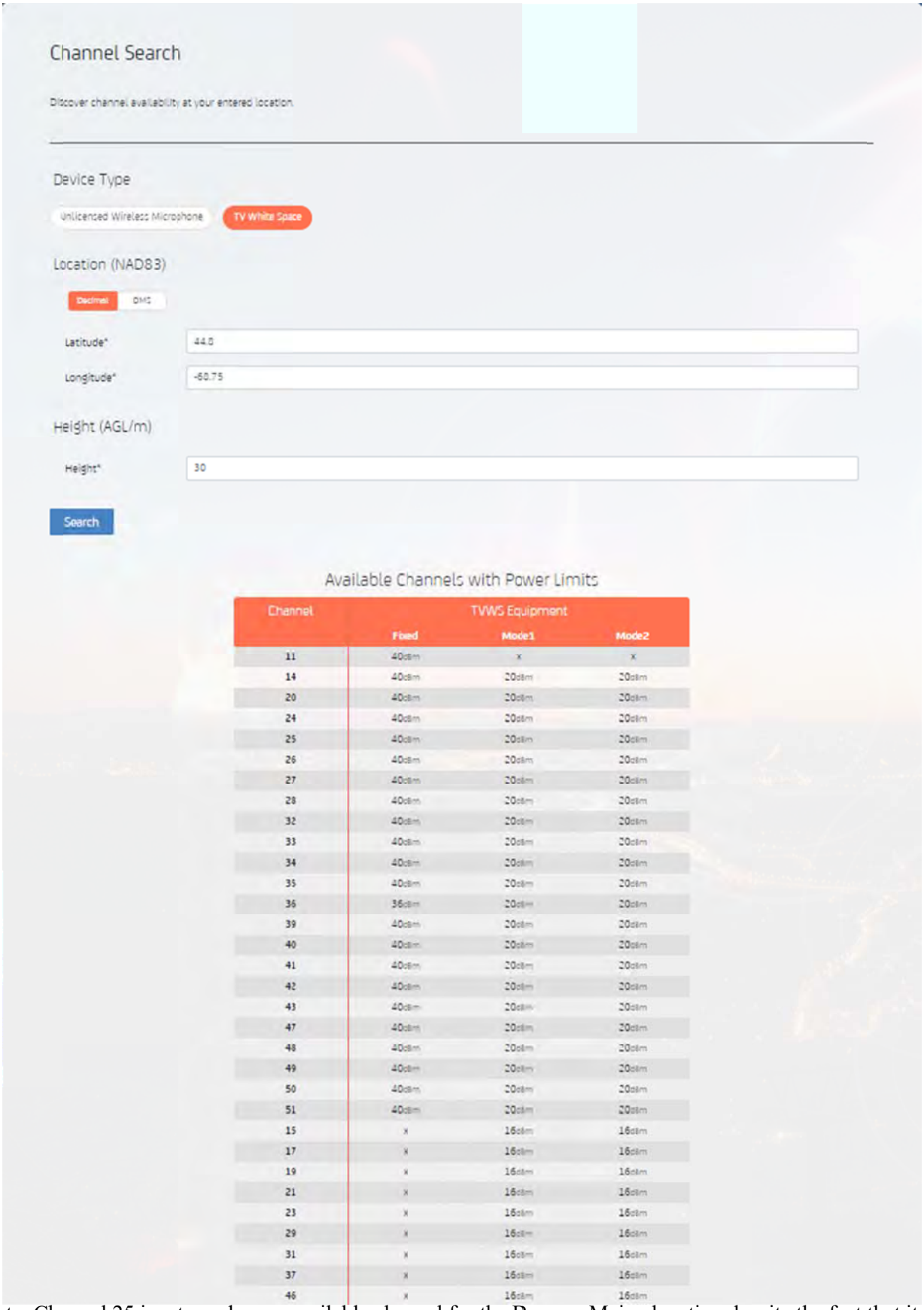
## WMEB-TV LICENSED FACILITY RECORDS

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida

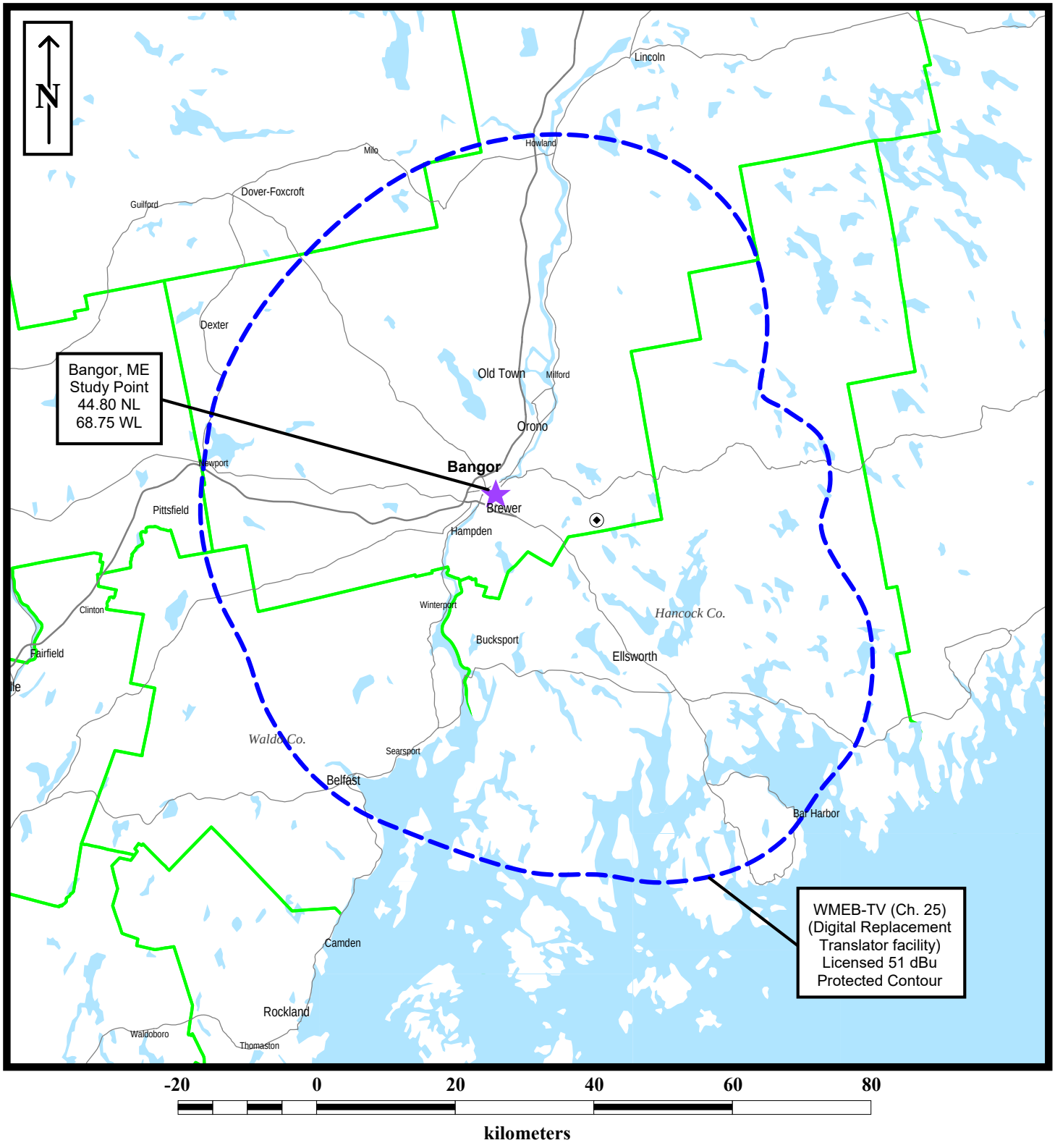
| *Callsign* | *Chan.* | *Type* | *Zone* | *Service* | *Status* | *City* | | *State* | *Latitude* | *Longitude* | *App. ID* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *ARN* | | | *DA* | *Ant. ID* | *Rotation* | *ERP (kW)* | *HAAT (m)* | *RCAMSL (m)* | | *Rec. Type* | *Facility ID* | |
| **WMEB-TV** | 9 | L | 1 | DT | LIC | ORONO | | ME | 044-42-11 | 069-04-47 | 603000 | |
| BLEDT-20020508AAS | | | D | 40127 | 0 | 15 | 375 | 490 | | C | 39648 | /1/ |
| **WMEB-TV** | 25 | L | | LD | LIC | EAST EDDINGTON | | ME | 044-45-45 | 068-33-58 | 1437412 | |
| BLEDT-20110729ADO | | | C | 97276 | 0 | 15 | | 387.8 | | C | 39648 | /2/ |

Notes:
/1/ - WMEB-TV primary facility license record for Channel 9.
/2/ - WMEB-TV Digital Replacement Translator ('DRT') facility license record, which is erroneously listed in Nominet TVWS database with the primary station channel (9) instead of its licensed channel (25).

# BANGOR, MAINE




Note: Channel 25 is returned as an available channel for the Bangor, Maine location despite the fact that it is located within the co-channel protected contour of the WMEB-TV digital replacement translator ('DRT') facility at East Eddington, ME (Ch. 25).




# LOCATION OF BANGOR, ME STUDY POINT AND WMEB-TV (CH. 25 DRT) PROTECTED CONTOUR

duTreil, Lundin & Rackley, Inc. Sarasota, Florida

# NOMINET TVWS DATABASE EVALUATION

## PROTECTED RECEIVE SITE CASE STUDY
## AGUILA, ARIZONA EXAMPLE

In this case study, it was found that the Nominet TVWS database failed to protect a FCC registered Low Power TV receive location.

The example study location is at Aguila, Arizona at coordinates: 33.95 N.L. / 113.15 W.L.

The known protected Low Power TV receive location is one of over 30 locations that were provided protected by the FCC in its *Order* in ET Docket No. 04-186, Released: June 1, 2012. The location is for the receive point of microwave station WQHE250 located at Smith Peak, Arizona, which receives station KAZT-CD on RF Channel 36.

The attached listing is an FCC Engineering Database extraction for the KAZT-CD showing the distance and bearing from the WQHE250 receive location on Smith Peak. Specifically, the Smith Peak receive antenna would be pointed at 124°True to be directed to the KAZT-CD transmitter site.

A test study was conducted using the Nominet Channel Search tool for the Aguila location. The attached Nominet Channel Search tool results indicate that Channel 36 is available for a fixed TVWS facility with a power limit of 36 dBm.

A distance and bearing study to the Aguila study location from the Smith Peak receive location indicates that it is located at a distance of 22.8 km at a bearing of 124°True. Therefore, the study point is within the Channel 36 protected ‘keyhole’ for the Smith Peak receiver and it should be precluded from co-channel use.

# TV Inquiry

## BEARING CALCULATION FOR SMITH PEAK

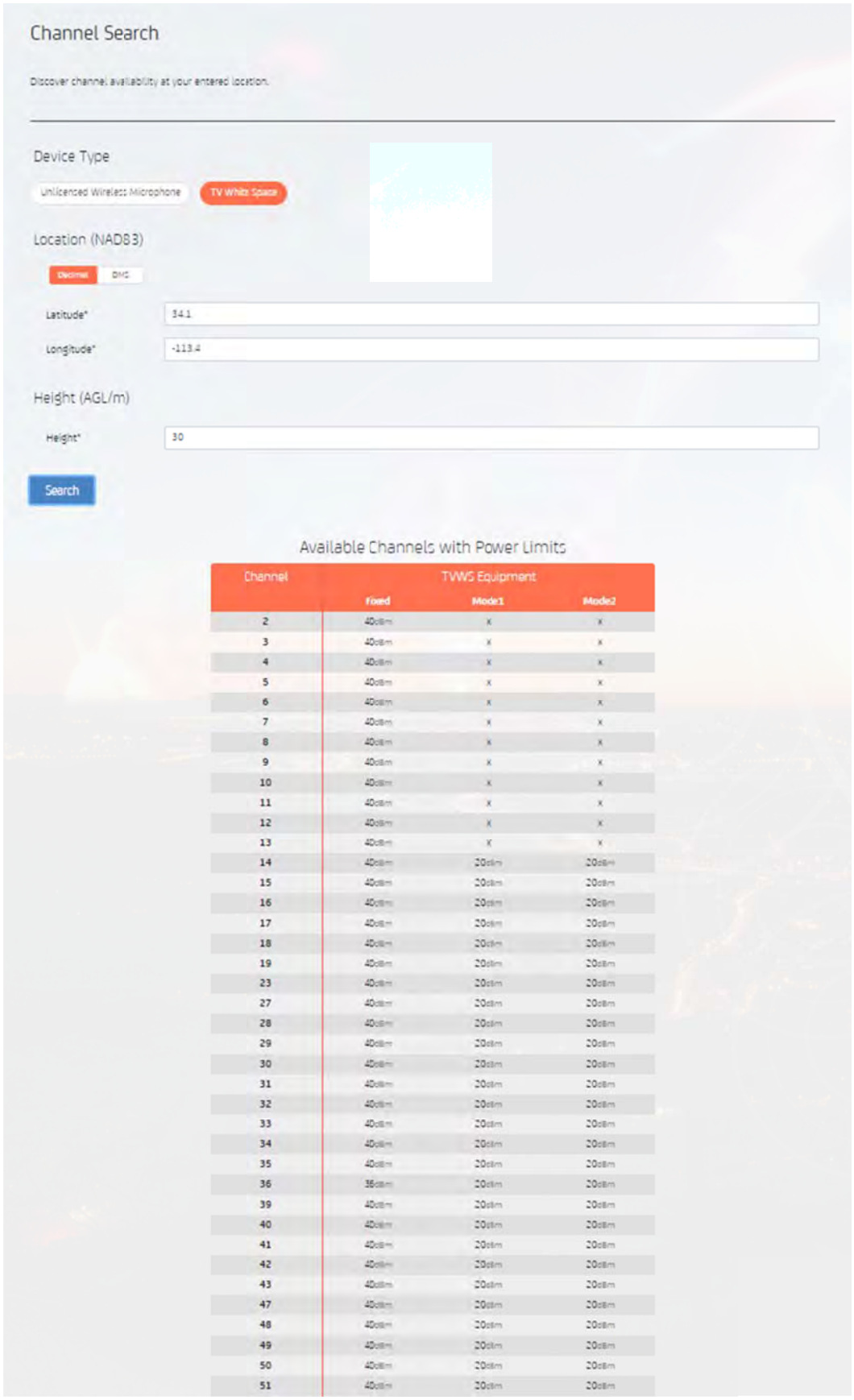
du Treil, Lundin, & Rackley, Inc., Sarasota, Florida

**Listed stations are within 150 km of the point at 034-03-55 113-21-17.** (Smith Peak receive point location)

| *Callsign* | *Chan.* | *Type* | *Zone* | *Service* | *Status* | *City* | | *State* | *Latitude* | *Longitude* | *Distance (km)* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *ARN* | | | *DA* | *Ant. ID* | *Rotation* | *ERP (kW)* | *HAAT (m)* | *RCAMSL (m)* | *Rec. Type* | *Facility ID* | *Bearing (deg)* | |
| **KAZT-CD** | 36 | L | | DC | LIC | PHOENIX | | AZ | 033-20-01.8 | 112-03-40.5 | 144.72 | /1/ |
| BLDTA-20100120ACL | | | D | 24175 | 0 | 15 | | 853.6 | C | 72618 | 123.86 | |

Notes:
/1/ - The calculated bearing from the Smith Peak receive point for Channel 36 to the KAZT-CD transmitter is 123.86°True (rounded to 124°True).

# AGUILA, ARIZONA



Channel Search

Discover channel availability at your entered location.

Device Type

Unlicensed Wireless Microphone | TV White Space

Location (NAD83)

Decimal | DMS

Latitude* 34.1

Longitude* -113.4

Height (AGL/m)

Height* 30

Search

Available Channels with Power Limits

| Channel | TVWS Equipment | | |
|---|---|---|---|
| | Fixed | Mode1 | Mode2 |
| 2 | 40dBm | x | x |
| 3 | 40dBm | x | x |
| 4 | 40dBm | x | x |
| 5 | 40dBm | x | x |
| 6 | 40dBm | x | x |
| 7 | 40dBm | x | x |
| 8 | 40dBm | x | x |
| 9 | 40dBm | x | x |
| 10 | 40dBm | x | x |
| 11 | 40dBm | x | x |
| 12 | 40dBm | x | x |
| 13 | 40dBm | x | x |
| 14 | 40dBm | 20dBm | 20dBm |
| 15 | 40dBm | 20dBm | 20dBm |
| 16 | 40dBm | 20dBm | 20dBm |
| 17 | 40dBm | 20dBm | 20dBm |
| 18 | 40dBm | 20dBm | 20dBm |
| 19 | 40dBm | 20dBm | 20dBm |
| 23 | 40dBm | 20dBm | 20dBm |
| 27 | 40dBm | 20dBm | 20dBm |
| 28 | 40dBm | 20dBm | 20dBm |
| 29 | 40dBm | 20dBm | 20dBm |
| 30 | 40dBm | 20dBm | 20dBm |
| 31 | 40dBm | 20dBm | 20dBm |
| 32 | 40dBm | 20dBm | 20dBm |
| 33 | 40dBm | 20dBm | 20dBm |
| 34 | 40dBm | 20dBm | 20dBm |
| 35 | 40dBm | 20dBm | 20dBm |
| 36 | 36dBm | 20dBm | 20dBm |
| 39 | 40dBm | 20dBm | 20dBm |
| 40 | 40dBm | 20dBm | 20dBm |
| 41 | 40dBm | 20dBm | 20dBm |
| 42 | 40dBm | 20dBm | 20dBm |
| 43 | 40dBm | 20dBm | 20dBm |
| 47 | 40dBm | 20dBm | 20dBm |
| 48 | 40dBm | 20dBm | 20dBm |
| 49 | 40dBm | 20dBm | 20dBm |
| 50 | 40dBm | 20dBm | 20dBm |
| 51 | 40dBm | 20dBm | 20dBm |

Note: Channel 36 is returned as an available channel for the Aguila location despite the fact that it is located within the co-channel ‘keyhole’ protected zone for WQHE250 reception of Channel 36 (KAZT-CD).

# DISTANCE AND BEARING CALCULATION FOR SMITH PEAK RECEIVE LOCATION TO AGUILA, ARIZONA STUDY POINT